**Conference: Toward Other Earths**

Title: The Nulling Coronagraph--Planet Detection in Visible Light with a Single Aperture Telescope and Nulling Interferometer

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Abstract: This talk describes a space mission for visible direct detection of Earth like extrasolar planets using a nulling coronagraph instrument behind a 4m telescope in space. Such a system is capable of satisfying the scientific objectives of the Terrestrial Planet Finder mission at a fraction of the complexity, and hence a fraction of the cost. In our design, a 4 beam nulling interferometer is synthesized from the telescope pupil, produces a very deep null proportional to theta^4 which is then filtered by a coherent array of single mode fibers to suppress the residual scattered light. Starlight suppression of 1e-10 is achievable using diffraction limited telescope optics and similar quality components in the optical train (lambda/20). We show key features of this in a space mission, present latest results of laboratory measurements demonstrating achievable null depth, and discuss future key technical milestones.